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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/718,304	11/20/2003	Hwa-Sun Yoo	784-59 (SI-19539)	9786
28249 7590 07/26/2007 DILWORTH & BARRESE, LLP 333 EARLE OVINGTON BLVD. SUITE 702 UNIONDALE, NY 11553			EXAMINER KANG, SUK JIN	
			ART UNIT 2616	PAPER NUMBER
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

## Office Action Summary

Application No.

10/718,304

Applicant(s)

YOO ET AL.

Examiner

Suk Jin Kang

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 20 November 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date See Continuation Sheet.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :5/17/04, 6/19/06, 8/28/06, 3/29/07, and 5/14/07.

## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of applicant's claim for foreign priority under 35 U.S.C. 119(a)-(d). Receipt is acknowledged of papers, which have been placed of record in the file.

### *Information Disclosure Statement*

2. The information disclosure statements submitted on May 7, 2004, June 19, 2006, August 28, 2006, March 29, 2007, and May 14, 2007 have been considered by the Examiner and made of record in the application.

### *Claim Rejections - 35 USC § 101*

3. 35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

4. **Claims 4 and 5** are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter.

**Claims 4 and 5** recite a mathematical algorithm without practical application.

**Claim 5** states that a computer program device readable by a machine, tangibly embodying a program of instructions executable by the machine to perform method steps for a method of generating an edge sidelobe canceling signal in an orthogonal frequency division multiplexing access system. Upon reading applicant's specification, it clearly states, "The computer readable recording medium may et a storage media,

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such as a magnetic storage medium (for example, a ROM, a floppy disc, or a hard disc), an optical readable medium (for example, a CD-ROM or DVD), or **carrier wave** (for example, transmitted through the Internet)." (page 16, lines 26-30) Since the computer readable medium could be considered an electromagnetic signal, the subject matter claimed in Claim 5 is again deemed non-statutory subjected matter.

***Claim Rejections - 35 USC § 102***

5. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

6. **Claims 1 and 2** are rejected under 35 U.S.C. 102(e) as being anticipated by **Miyashita et al.** (U.S. Patent # 6,304,611 B1).

Consider **claim 1**, Miyashita et al. discloses an uplink communication method in an orthogonal frequency division multiplexing access system, comprising: generating upper and lower edge sidelobe canceling signals in a transmitting terminal for an uplink (column 7 lines 44-57); and inserting the upper and the lower edge sidelobe canceling signals into guard intervals, respectively, adjacent to a subband allocated to a user (column 7 lines 44-57, column 9 lines 33-39) and performing inverse fast Fourier transform on user transmission signals and the upper and the lower edge sidelobe canceling signals (column 2 lines 39-58, column 7 lines 22-26).

Consider **claim 2**, and as applied to claim 1, Miyashita et al. discloses the uplink communication method wherein the upper and the lower edge sidelobe canceling signals are transmitted over subcarriers, respectively, nearest to the subband among subcarriers included in the respective guard intervals (column 5 lines 36-47).

7. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

8. **Claims 4, 5, and 8** are rejected under 35 U.S.C. 102(e) as being anticipated by **Tanaka et al.** (U.S. Patent Application Publication # 2002/0196734 A1).

Consider **claims 4 and 5**, Tanaka et al. discloses a computer program device readable by a machine, tangibly embodying a program of instructions executable by the machine (60, processor, figure 1, [0017]) to perform method steps for a method of generating an edge sidelobe canceling signal in an orthogonal frequency division multiplexing access system, the method comprising: inputting a user transmission signal vector  $X_i$  ( $X_i$ , sub-carrier signal, [0018], [0048]); generating upper and lower weight vectors  $w_u$  and  $w_l$  (50, weight calculator, figure 1)(weight  $W$ , figure 2, [0062]); and performing an inner product ([0049] lines 1-5) on the user transmission signal vector and the upper weight vector to generate an upper edge sidelobe canceling signal and

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performing an inner product on the user transmission signal vector and the lower weight vector to generate a lower edge sidelobe canceling signal ([0049] lines 1-5, [0059], [0060], [0066] lines 8-11).

Consider **claim 8**, Tanaka et al. discloses an apparatus for generating an edge sidelobe canceling signal in an orthogonal frequency division multiplexing access system, the apparatus comprising: a storage unit (50 and 140, weight calculator and weight selector, figure 1) for storing one of an upper weight vector and a lower weight vector and reading vectors of one of the upper and the lower weight vector in a predetermined order according to an edge sidelobe selection signal ([0050] lines 8-11, [0053], [0060]); and a matrix operation unit (multipliers, 160-163, figure 1) for performing an inner product on a user transmission signal vector and one of the upper and the lower weight vector provided from the storage unit, thereby generating one of an upper and a lower edge sidelobe canceling signal ([0049], [0066], [0070]).

### ***Claim Rejections - 35 USC § 103***

9. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the Examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein

were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the Examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

10. **Claims 3, 6, and 7** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Miyashita et al.** (U.S. Patent # 6,304,611 B1) in view of **Tanaka et al.** (U.S. Patent Application Publication # 2002/0196734 A1).

Consider **claim 3**, and as applied to claim 1, Miyashita et al. discloses the claimed invention, but may not expressly disclose the uplink communication method wherein the upper and the lower edge sidelobe canceling signals are obtained by performing an inner product on a transmission signal vector of the transmitting terminal and an optimized upper weight vector and performing an inner product on the transmission signal vector of the user transmitting terminal and an optimized lower weight vector, respectively.

However, in the same field of endeavor, Tanaka et al. discloses the uplink communication method wherein the upper and the lower edge sidelobe canceling signals are obtained by performing an inner product ([0049] lines 1-5) on a transmission signal vector of the transmitting terminal (serial signal, [0047] lines 5-8) and an optimized upper weight vector (weight W, [0048]) and performing an inner product on the transmission signal vector of the user transmitting terminal (sub-carrier signal, [0018], [0048]) and an optimized lower weight vector (weight W, [0048]), respectively.

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the inner product of the transmission signal vector and the weight vectors as taught by Tanaka et al. with the method as disclosed by Miyashita et al. for the purpose of minimizing interference between users in an OFDM system.

Consider **claim 6**, Miyashita et al. discloses an uplink communication apparatus in an orthogonal frequency division multiplexing access system, the uplink communication apparatus including a transmitting terminal comprising: an edge sidelobe canceling signal generation unit (2, figure 9, column 7 lines 12-14) for generating an upper edge sidelobe canceling signal and a lower edge sidelobe canceling signal, and for allocating the upper and the lower edge sidelobe canceling signals to subcarriers in guard intervals, respectively (column 7 lines 44-57, column 9 lines 33-39); an inverse fast Fourier transform (IFFT) unit (81, figure 9, column 7 lines 12-14) for performing IFFT on a transmission signal of the transmitting terminal allocated to subcarriers in a predetermined subband and the upper and the lower edge

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sidelobe canceling signals allocated to the subcarriers in the guard intervals (column 2 lines 39-58); and a guard interval insertion (82, figure 9, column 7 lines 12-14) for inserting the guard intervals into the IFFT data provided from the IFFT unit (column 7 lines 21-26), but may not expressly disclose a signal mapping unit for mapping a data stream input in serial to one of a quadrature-phase shift keying (QPSK) signal and a quadrature amplitude modulation (QAM) signal; a serial-to-parallel conversion unit for converting the serial data stream mapped to one of the QPSK and QAM signals into parallel data; an edge sidelobe canceling signal corresponding to an inner product of a transmission signal vector of the transmitting terminal and an optimized upper and lower weight vector, and a parallel-to-serial conversion unit for converting data resulting from the insertion into serial data, and outputting orthogonal frequency division multiplexing modulated data.

However, in the same field of endeavor, Tanaka et al. discloses a signal mapping unit (110, modulator, figure 1) for mapping a data stream input in serial to one of a quadrature-phase shift keying (QPSK) signal and a quadrature amplitude modulation (QAM) signal ([0047]); a serial-to-parallel conversion unit (100, figure 1) for converting the serial data stream mapped to one of the QPSK and QAM signals into parallel data ([0047], [0052]); an edge sidelobe canceling signal corresponding to an inner product ([0049] lines 1-5) of a transmission signal vector of the transmitting terminal (serial signal, [0047] lines 5-8) and an optimized upper and lower weight vector (weight W, [0048]), and a parallel-to-serial conversion unit (130, figure 1) for converting data

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resulting from the insertion into serial data, and outputting orthogonal frequency division multiplexing modulated data ([0028], [0048], [0052]).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the inner product of the transmission signal vector and the weight vectors as taught by Tanaka et al. with the apparatus as disclosed by Miyashita et al. for the purpose of minimizing interference between users in an OFDM system.

Consider **claim 7**, and as applied to claim 6, Miyashita et al., as modified by Tanaka et al., discloses the uplink communication apparatus wherein the upper and the lower edge sidelobe canceling signals are transmitted over the subcarriers, respectively, nearest to the predetermined subband among subcarriers included in the respective guard intervals (column 5 lines 36-47).

11. **Claims 9 and 10** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Tanaka et al.** (U.S. Patent Application Publication # 2002/0196734 A1) in view of **Miyashita et al.** (U.S. Patent # 6,304,611 B1).

Consider **claim 9**, and as applied to claim 8, Tanaka et al. discloses the claimed invention, but may not expressly disclose the apparatus wherein when a single subband comprises M subcarriers, the storage unit is implemented by a look-up table.

However, in the same field of endeavor, Miyashita et al. discloses the apparatus wherein when a single subband comprises M subcarriers (column 2 lines 39-52, column

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4 lines 1-3), the storage unit is implemented by a look-up table (1-6, figure 16, column 12 lines 1-4).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate a look-up table in the storage unit as taught by Miyashita et al. with the apparatus as disclosed by Tanaka et al. for the purpose of minimizing interference between users in an OFDM system.

Consider **claim 10**, and as applied to claim 8, Tanaka et al. discloses the claimed invention, but may not expressly disclose the apparatus wherein the upper and the lower edge sidelobe canceling signals are each a function of a statistical characteristic of a frequency offset of the transmitting terminal and a number of the subcarriers included in the subband.

However, in the same field of endeavor, Miyashita et al. discloses the apparatus wherein the upper and the lower edge sidelobe canceling signals (column 5 lines 36-47) are each a function of a statistical characteristic of a frequency offset of the transmitting terminal and a number of the subcarriers included in the subband (column 3 lines 44-51, column 4 lines 16-19).

Therefore, it would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the upper and the lower edge sidelobe canceling signals as taught by Miyashita et al. with the apparatus as disclosed by Tanaka et al. for the purpose of minimizing interference between users in an OFDM system.

**Conclusion**

12. Any response to this Office Action should be **faxed to (571) 273-8300 or mailed to:**

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

**Hand-delivered responses** should be brought to

Customer Service Window  
Randolph Building  
401 Dulany Street  
Alexandria, VA 22314

13. Any inquiry concerning this communication or earlier communications from the Examiner should be directed to Suk Jin Kang whose telephone number is (571) 270-1771. The examiner can normally be reached on Monday - Friday 8:00-5:00 EST.

If attempts to reach the Examiner by telephone are unsuccessful, the Examiner's supervisor, Chau Nguyen can be reached on (571) 272-3126. The fax phone number for the organization where this application or proceeding is assigned is (571) 273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you

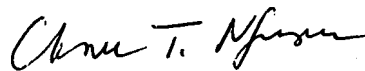
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have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free) or 703-305-3028.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist/customer service whose telephone number is (571) 272-2600.

*Suk Jin Kang*  
S.J.K./sjk

July 16, 2007



CHAU NGUYEN  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2600